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TYPES OF INDUSTRIAL ESTATES

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TYPES OF INDUSTRIAL ESTATES

Areas planned for the establishment of groups of industries are known by different names in different countries. The most common names are "industrial estate", "industrial park", "industrial district", "industrial subdivision", "trading estate", "industrial area", "industrial tract" and "industrial zone". The literature on the subject has tended in recent years to treat the first five terms as synonymous with each other and to use "industrial estate" as the generic concept. The terms "industrial area" and "industrial tract" are usually used to denote the same type of industrial clustering, but different from the industrial estate. The term "industrial zone" is used as different from both "industrial estate" and "industrial area".

An attempt will be made in this paper to distinguish the main categories of industrial estates on the basis of the facilities and services which they may provide, their location and their functions. The distinction between industrial "estate", "area" and "zone" mentioned earlier is based on the type of facilities and services provided and will therefore be discussed under this heading.

I. TYPES BASED ON FACILITIES AND SERVICES

Industrial areas, zones, townships and estates

An industrial area may be defined as a tract of land developed according to a comprehensive plan for the use of a group of industrial units. Development includes transportation facilities, internal roads and streets and installation of utilities; no factory buildings are provided by the sponsoring authority. An industrial area should be distinguished from an industrial zone which is an area in which land is restricted to industrial uses by authority of the government or local bodies, in which no facilities and promotional services are provided. An industrial area may be part of an industrial zone, but it is a distinct area planned and developed for the use of a community of industrial enterprises, which itself may be zoned for different

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This paper has been prepared by Mr. P.C. Alexander, Senior Technical Adviser, in co-operation with the Small-scale Industry Section, Centre for Industrial Development.

types of industries. Again, an industrial area should be distinguished from an industrial township. An industrial township is similar to an industrial area with regard to provision of basic facilities for development of industries, but provides in addition for housing accommodation and other similar amenities associated with a town.

In industrially advanced countries, provision of developed plots may be adequate for the stimulation of industrial development. Even in developing countries industrial areas may be adequate encouragement for large industries which have the necessary capital and technical resources to construct buildings of their own, but the case of small-scale industries in developing countries is different. The main problem of small-scale industries in developing countries is their weakness arising out of a variety of factors such as inadequate capital and lack of technical and managerial knowledge. Even if they are able to raise the capital, the formalities of acquiring a suitable plot of land, getting building plans approved by the local authorities, securing supply of water, power, gas and other such facilities represent formidable difficulties. The formalities involved and the multiplicity of agencies and authorities to be approached often discourage the small industrialist from putting up a factory building. Sometimes he may not have even plans and ideas of his own about the right type of buildings which he requires and may need technical advice even on this. In these circumstances industrial estates with built up factory accommodation and services, rather than industrial areas will be the best pattern suitable for small-scale industries in developing countries. It is proposed to use the term "industrial estate" in this paper to refer to planned clusterings of industrial enterprises with built up factory accommodation and services as distinguished from industrial areas with developed plots.

Estates with general-purpose and custom-built factories

Built-up factory accommodation in industrial estates may be of two types: (a) general-purpose or standard factories and (b) custom-built factories. General-purpose factories are buildings of standard

sizes erected in advance of demand. To build factories of various sizes in anticipation of demand, the planners of industrial estates have to make an intelligent assessment of the requirements of prospective tenants. Experience shows that general-purpose factories can meet satisfactorily the requirements of the vast majority of tenants. Estates with standard factories have some special advantages. Standardization leads to certain economies in construction which are not possible in custom-built factories. Further, in certain circumstances provision of factory facilities in advance serves as a positive inducement to new enterprises. Industrial estates are not intended merely as projects for meeting the existing demand for factory accommodation. In certain areas, particularly in industrially backward areas, the availability of factory buildings serves as a factor for creating the demand.

Custom-built factories may have to be provided for in special cases where manufacturing operations demand special types of buildings. As a rule, the demand for custom-built factories for small-scale industries will be comparatively small. Such factories should be allotted to industrial units on sale or hire-purchase basis and not on rental basis for short duration, as it will be difficult to find new tenants having identical requirements, when vacancies arise.

The most flexible arrangement will be to combine in an estate both general-purpose and custom-built factories. Decisions regarding the type of buildings to be provided in an estate depend on the prospective demand for factory accommodation and need to be taken with reference to the special circumstances of each case.

Estates with common service facilities

A common feature of all industrial estates is the provision of general facilities such as power, water, gas, transport, fire protection, watch and ward, first aid, canteen and so on. In some estates, general facilities include, in addition, warehouses, bank, post office, library, sales depots, show rooms, reading rooms, conference rooms, etc. Industrial

estates for small-scale industries usually provide certain technical service facilities as a measure of assistance to the tenants. These facilities, generally known as "common service facilities", may include maintenance and repair shop, machine lease shop, tool room, laboratory for testing and quality control, foundry, forge, electroplating and other services. Common service facilities are invariably provided by the estate authorities on a no-loss no-profit basis. In some cases they are organized and managed by the estate authority during the initial period and later turned over to the tenants to be operated by them on co-operative lines.

Common service facilities such as the first four mentioned above may be required on most industrial estates, irrespective of their composition, since they may serve economically and efficiently the needs of most of the occupants. Special technical facilities can be provided in an estate economically only if there is an adequate number of industrial units belonging to the same or allied trades.

An important merit of an industrial estate is that it permits to integrate most schemes of promotion, assistance and training for small entrepreneurs. Small industries in developing countries are in great need for technical and managerial guidance and assistance, the usefulness of which will be maximized when combined with other services and facilities available in industrial estates. It is, therefore, recommended that industrial estates for small-scale industries in developing countries should combine both types of facilities.

II. TYPES BASED ON LOCATION

Industrial estates have been used in different countries for a variety of purposes. By and large their main objective has been planned development of industries, but in some countries, industrial development through industrial estates has been considered as a means for development of certain areas or regions. Thus, in the United Kingdom industrial estates have been serving the main objective of development of less developed or depressed areas. In some countries industrial estates

have been utilized in connexion with the development of ports, airports and railroad centres. Elsewhere, their main objective has been to relieve congestion in big cities and towns and, therefore, to provide alternate accommodation in areas far away from urban and metropolitan centres. In a few developing countries, industrial estates have been used as a tool for the industrialization of rural areas. On the whole, three main types of estates can be distinguished on the basis of location, each one presenting special characteristics: estates located in or near big cities; estates located in small towns; and estates located in rural areas.

Estates in or near big cities

In general, small-scale industries tend to develop in big cities because of the obvious advantages offered by these locations. The "external economies" found there include, in addition to easy availability of power, gas, water and transport facilities, a supply of trained labour and the best market for industrial products. However, in most cities, small-scale industries usually develop in an unplanned manner, and are often located in places least conducive to productivity, such as residential buildings and areas where limitations of space and absence of alternate accommodation prevent their growth and expansion and where a number of social and hygienic problems arise. For these reasons and in order to check further urban congestion, planners often endeavour to divert industry from the big towns, and to steer it towards the outlying areas. The achievement of this objective may be facilitated by the provision of industrial estates in the suburbs or areas within commuting distance from the city.

There is justification for locating industrial estates in or near big cities when the estates are expected to have a demonstration effect. In developing countries the first series of estates are usually established by the Government. They are expected to be demonstration projects to provide incentive and guidance to private entrepreneurs to organize similar projects on their own initiative. It is in the big cities that the maximum demonstration effect is likely to be achieved.

Slum clearance and urban improvement are given high priority in the development programmes of many developing countries. Even though the policy of most countries is to move industries out of the big cities and towns, it may sometimes become necessary to provide alternate accommodation to small industrial units affected by slum clearance and city improvement programmes in or near the city itself. Location of industrial estates in or near big cities will become necessary in such circumstances.

"Flatted factories" or multi-storeyed factories have sometimes been recommended as an appropriate pattern of industrial accommodation in big cities, the main justification for this pattern being the acute scarcity of land suitable for factory accommodation in such locations. However, flatted factories present special problems like transport of goods and employees from floor to floor and may be suitable only for certain types of industries. Provision of special services like lifts, hoists, ramps and so on may prove to be very costly and raise the rent beyond the means of small entrepreneurs. Except in exceptional cases, this pattern does not appear to be a substitute for industrial estates in developing countries.

Industrial estates in small towns

A major objective of industrial estate programmes in many countries, developed or less developed, is the promotion of dispersed industrial development. In developing countries there may be a danger in pushing such a policy too far. In those countries, the basic problem is to stimulate the growth of industry, and dispersal policies may have to be subordinated to development possibilities. In the advanced countries, basic facilities for industrialization such as roads, railroads, electricity and water are generally available in most places, though there may be marked variations in other factors like availability of skilled labour, markets and raw materials. In the developing countries many small towns lack the basic facilities and location of industries in such places may meet with considerable difficulties or result in

failure. An industrial estate may accentuate the advantages of the facilities, where these exist, but cannot be a substitute for them. If the estate projects were to provide all the basic facilities, they would prove to be very costly for the industrial units concerned. However, in locations with inadequate infrastructure but where, because of the existence of raw materials, adaptable labour, sufficient transportation facilities and potential market, there are reasonable prospects for the development of industry, the establishment of an industrial estate may provide a justification for supplying certain infrastructure facilities, even, if need be, on a limited scale. For instance, diesel generators may be installed or some water works constructed for the industrial estate, as a first step in a more comprehensive infrastructure development programme for the town or the surrounding area. Therefore, the policy of location of industrial estates should tend to select the most advantageous location consistent with the need for dispersal. Experience of some developing countries like India shows that by and large small towns offer satisfactory conditions for the dispersed development of small-scale industries.

In the industrial estates of small towns, the provision of services and facilities may be more costly and more difficult than in those of big cities because of the absence of alternative sources of assistance. While an industrial extension centre with a small permanent staff will be a necessity on such estates, arrangements may be made for visits, periodically or in case of need, by roving specialists or teams of experts from a main extension centre.

Industrial estates in small towns will be mainly aimed at the promotion of new enterprises. There will be a comparatively smaller number of existing industries in such areas requiring rehousing in new factory buildings. To a limited extent industrial estates in small towns may provide accommodation to industries migrating from big cities in pursuance of the government's policies for re-location and distribution of industries, or for branch units of existing industries; but generally the role of industrial estates in small towns will be one of promotion of new locally-sponsored industries.

Industrial estates in rural areas

Industrial estates have often been recommended as an effective means in rural industrialization programmes. It is, however, necessary to stress the obvious limitations of such programmes. The main cause of the slow pace of industrialization in rural areas is the absence of the minimum facilities required for industrial development or the uneconomic price the entrepreneur has to pay for them. Rural areas are predominantly agricultural and only "quasi-industrial" activities are pursued by rural artisans like carpenters, blacksmiths, weavers, cobblers and potters. Rural artisans as a class do not show much inclination in establishing small-scale industries, and even the few who are interested in industry choose to move to the towns and cities. Enterprising industrialists and skilled workers from the urban areas are equally reluctant to go over to rural areas because of the lack of economic and social facilities. It is obvious that by itself an industrial estate will not be able to fill up these gaps and even if it does, it will be at a very high cost. Industrial estates may, however, be feasible in rural areas in special circumstances where rural location provides certain competitive advantages and economies like proximity to the main raw materials or availability of specialized skills.

In some countries industrial estates have been recommended for rehabilitation and development of the artisan trades. The main limitation of such a programme is that there may not be adequately large concentrations of artisans in one place to justify an estate. The rural artisans are generally reluctant to move far out from their places of residence, and it will be difficult to induce them to make use of the facilities in industrial estates if these are not located very near their own places. The solution to this problem is to provide simple worksheds or workshop blocks to artisans rather than industrial estates of the conventional type.

III. TYPES BASED ON FUNCTIONS

The general type of industrial estate is one which provides accommodation to all trades, subject of course to the restrictions on "obnoxious" industries and in some cases, on heavy consumers of water or power. However, some special types of industrial estates may be distinguished on the basis of their functions. The chief among them are single-industry estates, functional estates, ancillary estates and nursery estates.

Single industry estates

These are industrial estates providing factory accommodation exclusively to industrial units belonging to the same trade. For example, there can be separate industrial estates for manufacturing of leather goods, pottery, wooden furniture and so on. The main advantage of single-industry estates is that technical common service facilities can be organized efficiently and economically for the benefit of the tenants. There are also special economies and conveniences in collective purchase of raw materials and joint efforts in sales of finished products. Such estates are particularly useful for the rehabilitation of declining industries and the promotion of new industrial complexes.

Functional estates

A functional estate is one in which the functions of one industry are subdivided among a number of small-scale units located in one place, each functioning according to a co-ordinated manufacturing programme. The main advantage of a functional estate is that it can provide to small-scale units the economies and efficiencies of specialization and large-scale production. For example, a functional estate for radios or sewing machines may have a large number of small-scale units manufacturing components and parts and one central assembly and finishing unit. The industrial units will have the advantage of specialization and standardization and also the economies of production on a large scale.

Functional estates are particularly suitable for co-operative ventures. They also encourage small industrialists to enter new fields of manufacture which normally may not be feasible on a small-scale basis.

Ancillary estates

These are estates in which different small-scale units manufacture components, parts and stores which are required by a large industrial unit, on a sub-contracting basis. They are located generally in close proximity to the large industrial unit to facilitate technical supervision and assistance and economic transport.

In the early stages of small industry development, small units are usually encouraged to take up the manufacture of consumer goods. In many developing countries, large industries are reluctant to farm out orders to small-scale units and prefer to produce all components, parts and stores under their own roof. With the improvement in the production standards of small-scale industries and growing awareness of large firms about the advantages of sub-contracting, a vast field is being thrown open for small industries outside the manufacturing of consumer goods. Industrial estates appear to be an effective means of assisting small-scale units to take up the manufacture of even sophisticated components and parts required by large industries. In some of the successful ancillary industrial estates in India, the large firms undertake the responsibility of training skilled workers, and provide their sub-contractors with certain raw materials, technical guidance and quality control.

A danger to be guarded against in organizing ancillary estates is the exploitation of the small units by the parent company. The small units should be completely independent of the large units in management and control. Ancillary relationship should not result in placing the small units in a subordinate position fettering their growth and development. If organized on proper lines, ancillary estates can prove to be effective tools for the healthy development of small industries.

Nursery estates

Nursery estates are those which provide "nursery" or "nest" factories to meet the transitional space requirements of small enterprises as they develop from one phase of growth to another. The nest factories are divided into small workshop units, and as the small industrial unit grows from year to year, it is allowed to occupy more and more workshop space. However, it has to vacate the estate and set up its own factory building after it grows out of the nursery stage so that the space can be allotted to a new unit requiring "nursing". Nursery estates have not been tried extensively to justify general conclusions on their effectiveness. Prima facie they appear to be suitable for trial in developing countries.

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STIMULATION OF ENTREPRENEURSHIP AND ASSISTANCE TO SMALL INDUSTRIALISTS AT THE PRE-INVESTMENT STAGE

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STIMULATION OF ENTREPRENEURSHIP AND ASSISTANCE TO SMALL INDUSTRIALISTS AT THE PRE-INVESTMENT STAGE

INTRODUCTION

Stimulation of Entrepreneurship

The inadequacy and sometimes the lack of domestic entrepreneurial initiative in the field of industry is a characteristic feature of the less developed economies. The reluctance of nationals to engage in industrial ventures is due to a variety of factors, the principal of which are insufficient knowledge of technology and management, limitation of private financial resources, shortage of skilled manpower, ignorance of prospects offered by industry, and competition of other activities such as commerce and building.

In countries at early stages of industrialization, the lack of industrial base and of industrial climate is in itself a disincentive to entrepreneurship, and the vicious circle can be broken only by direct government investment and special measures to promote foreign and domestic private investment. Experience shows that, even in countries having achieved a measure of industrialization, where more favourable conditions for spontaneous industrial initiatives exist, measures of promotion and assistance aimed at reducing risks of entrepreneurship in industry are still required. These are all the more necessary in the case of small-scale industry, where the weaknesses, handicaps and risks of entrepreneurship are particularly great. Pre-investment guidance and assistance to small entrepreneurs appear to be needed not only in the developing countries but in the industrial ones as well.

In a broad sense, the concept of promotion of entrepreneurship covers all activities tending to induce and facilitate the establishment of new, and the expansion of existing, manufacturing enterprises. In that sense, it is almost synonymous with the promotion of industry in general, whether scale is large, medium or small, ownership national,

foreign or mixed. In this broad sense, it covers a variety of industrialization programmes, some of which apply to industry in general, others to industries of certain types and sizes. Thus, tax, customs and other incentives may be of general applicability or may be reserved to industries meeting certain conditions regarding type of activity or size of investment. Measures specifically aimed at promoting entrepreneurship in large-scale or medium-sized enterprises include establishment of financial markets, in particular stock exchanges, special credit facilities, government equity participations, guarantees to foreign investors, provision of industrial areas and sites. Measures intended to stimulate entrepreneurship in small-scale enterprises include establishment of industrial estates, industrial extension services, supervised credit, etc.

In a more narrow sense, promotion of entrepreneurship covers the provision of direct services to individual entrepreneurs, prospective or established, aimed at attracting and steering them towards new industrial activities, and assisting them, through counselling and training, in setting up, expanding or diversifying their undertakings. As a rule, assistance of this type is needed by people with limited technical and managerial knowledge and modest financial means. Especially in the newly independent countries, these people usually belong to the indigenous sector of the population. This type of promotion is a major element in a programme of development of small-scale industry.

In this as in other aspects of small industry development, promotion must be more thorough and sustained than is required in the case of larger enterprises. It is usually not enough to wait until prospective entrepreneurs come for advice and information on the establishment of an industrial enterprise. Prospective entrepreneurs should be sought out by an appropriate agency - small industry service institute or industrial extension centre - from likely sources: educated young men, merchants and traders, foremen and skilled workers

from large enterprises, artisans and handicraft workers, government officials, well-to-do agriculturists, etc. Quite often, technical assistance to established industrialists leads to recommendations for expansion, modernization or diversification of production which may entail such changes in accommodation, equipment, processes, management and product that they may be tantamount to the creation of a new unit.

Information should be provided to small enterpreneurs on all issues arising at the pre-investment stage: choice of industry and of industrial product lines, size of investment in fixed and working capital, size of plant, type of equipment, materials and production processes, sources of financing, marketing prospects, turnover and profitability, choice of location and so on. Assistance should be given them in making credit applications, carrying out incorporation formalities, obtaining building licenses, import licenses, exchange authorizations and other pre-requisites to establishing or expanding an industrial enterprise.

Such promotion should evidently be selective. It should not be aimed at giving rise to, or artificially maintaining, weak, vulnerable and inefficient industries. Entrepreneurship should be stimulated in industrial sectors offering favourable prospects and corresponding to the priority areas of the country's industrialization programme. The types of industries which are economic on a small scale, which can sustain the competition of larger firms, or which can be linked with these by complementary relationships, and which have prospects of expansion and diversification, should be identified through careful studies. Hence, the importance of surveys of prospects of industrial development, especially on a small scale, in various regions or localities of a developing country. Needless to say, selectivity is also needed in regard to the abilities and personality of the entrepreneur.

Studies and services for small-scale industries

Some of the broader aspects of promotion of entrepreneurship in small-scale industry are discussed in papers relating to industrial estates and industrial extension services. In this paper, attention is paid to the more narrow question of pre-investment studies and services. These are

examined under four principal aspects: feasibility studies, area surveys, market surveys and model schemes.

In general, the techniques employed in the first three types of studies are the same whether the studies are concerned with prospects of large-scale, medium-sized or small-scale industry. Inasmuch as the present publication is intended for officials and technicians of agencies for the promotion of small-scale industry, technical assistance experts and other persons engaged in the development of this sector who will have, as one of their main duties, to give assistance to entrepreneurs at the pre-investment stage, it has been thought useful to present, as part of this volume, this general information, emphasis being put, wherever appropriate, on aspects of special relevance to the development of small-scale industry.

This is also done for another reason. There is no doubt that in most developing countries, pre-investment studies and surveys carried out by industrial development corporations and banks and by planning agencies are, in view of the objectives of these organizations - development financing and development programming - mainly focused on large-scale and medium-sized industrial projects, in many cases at the level of the individual enterprise. In these surveys, the prospects of establishing small-scale enterprises are as a rule indicate in very general terms and detailed investigations are seldom undertaken. The pre-investment studies for small-scale industries discussed hereunder may, of course, be prepared by the economic and technical staff of development corporations and similar agencies, in particular Industrial Studies and Development Institutes, where they exist, but experience suggests that such studies will usually be given a relatively low priority, mainly because the time and preoccupations of the available staff will be directed towards the larger projects, current or prospective.

Thus, if detailed advance surveys of prospects for the establishment of small industries are to be carried out on a sufficient scale, they will generally need to be undertaken by special agencies for the promotion of this sector, or by a small industry unit of a general industrial development organization when - as is often the case in the smaller countries or in countries at early stages of industrialization - all aspects of industrial development are dealt with by a single body.

The fourth type of study - model schemes - is, on the other hand, prepared exclusively for small-scale industries. Standard schemes, indeed, are suitable for many small establishments, the larger enterprises requiring as a rule, "custom-made" plans.

It will be seen that in the case of small-scale industries, studies and surveys are only a part of promotion work at the pre-investment stage, special services to small entrepreneurs constituting the other, no less important, part. Some services, no doubt, need to be provided to facilitate the launching of larger establishments - say, assistance in finding land, constructing the factory, training and supplying labour - but much more has to be done to induce small entrepreneurs to become industrialists and to assist them in setting up their undertakings. In general, the surveys and studies described below will be effective only if complemented by such services.

PRE-INVESTMENT STUDIES AND SERVICES

Objectives

Pre-investment studies have two broad objectives: firstly, they are aimed at providing a government department or a public agency with the basic data needed for drawing up and implementing programmes of development of small-scale industries; secondly, they should guide entrepreneurs in taking appropriate decisions on product lines, location, size of enterprise, manufacturing operations, financing methods and marketing techniques.

A public or semi-public agency - government department, small industry service institute or industrial development corporation - needs several types of information in order to plan and execute a programme of promotion of small industry. It needs to know the prospects for small-scale manufacturing units in each type of industry and at different locations to determine, so far as feasible, what kinds of small industry should be given encouragement and what kinds should be discouraged. It also should have information on the types of developmental aid that are required and on the best locations for such facilities. A pre-investment study programme should thus enable the agency to identify industries which offer the best prospects for small-scale undertakings in different areas; to help in locating and determining the scope of facilities of industrial extension services, industrial estates, common services and other developmental aids; and to help in small industry financing.

Many of the studies mentioned above will also help prospective and existing entrepreneurs in reaching right decisions about the creation of new establishments or the improvement or expansion of existing ones. Entrepreneurs need information and analysis on the market outlook for specific manufactured goods and the types of product with best sales prospects; marketing channels; transportation costs and problems; choice among alternative processes; requirements and costs of plant and equipment, raw materials, power, components, etc.; managerial and technical staff; skilled and unskilled labour; profitability, and government policies, regulations and assistance.

Types of studies required

Four types of studies are required to meet the needs of entrepreneurs as well as of the development agency. These are: industry feasibility studies; area surveys; market surveys; and model schemes or industry guide sheets.

An industry feasibility study is concerned with the economic prospects of establishing and expanding a particular industry or manufacturing a specific product or group of products. The study attempts to evaluate and measure all the relevant factors - import, export, domestic demand, competition, raw material availability, capital, labour skills, production processes, etc. It provides conclusions and recommendations on the number and size of enterprises to be encouraged and their location, production, financing and marketing, investment required, cost of production and profitability, and policies and measures for establishment or expansion of the industry. Where an industry is not considered feasible, either in the short run or in the long run, the study analyses the reasons for such a conclusion and recommends either that the industry be discouraged or that measures be taken to improve the long-run prospects. An outline for an industry feasibility study is presented in Appendix I.

An area survey is a study of the industrial potential of a given area, which may be the whole of a country, a region, a province, a district or a town. The survey is an orderly, systematic investigation and analysis of the resources and markets of the area and analyses its competitive advantages or disadvantages for each potential industry as related to alternative sources of supply. The preparation of an area survey involves four general types of inter-connected analysis: firstly, an analysis of existing and potential demand for manufactured goods within and outside the area that might be met economically from industrial enterprises to be located in the area; secondly, an assessment of resources, human as well as material, available in the area, or that could be imported from outside at reasonable cost, and that are required for setting up manufacturing enterprises in specific industrial sectors; thirdly, an appraisal of the existing and prospective infra-structure development of the area, that is, its economic overhead facilities and social services, and the extent to which it could support industrial development; and finally, recommendations on those industries which are feasible and desirable,

considering the demand, the resources and the infra-structure development of the area. The area survey is carried out against the background of development plans of the country or of the area, and takes into account the implications for industrial development of projects in the field of agriculture, natural resources, power, irrigation, transport and so on. A carefully prepared area survey should provide the basis for a phased programme of industrial development, pin-pointing short-run and long-run industrial possibilities and the necessary measures of promotion and assistance. An outline for an area survey is presented in Appendix II.

Market surveys provide information on the outlets for given products which are open to existing and potential entrepreneurs. Such information is needed not only to improve distribution and to expand sales but also to assess the feasibility of candidate industries. The surveys cover size and location of markets and distribution centres, marketing channels, pricing policies and practices of wholesale and retail dealers and middlemen, distribution costs, characteristics of competing products, standardization and quality specifications, branding, packaging, publicity and advertising and consumer acceptance of existing or new products. Market surveys also provide information on the potential size of the market, the long-run effect of substitute products and the elasticity of demand. An outline for a market survey is presented in Appendix III.

When an area survey or an industry feasibility study reveal favourable prospects for an industry or a given product, it is useful to prepare a model scheme or an industry guide sheet for the guidance of entrepreneurs wishing to enter the industry or expand their product lines. These are short information pamphlets summarizing the essential requirements for establishing and operating the industry, or manufacturing the product. The information furnished describes the products to be manufactured; the process of manufacture; the size of operations; the requirements of fixed capital for land, buildings, machinery and equipment; the requirements of working capital for materials, stores,

wages and other charges; and an estimate of the income and expenditure of the enterprise, and of its anticipated profitability. An outline for a model scheme is presented in Appendix IV.

METHODS OF ANALYSIS

The methods of analysis employed in these surveys and studies depend upon the extent and detail of the historical, current and projected statistical data, the time and resources available for preparation of these studies and - not the least important - the aptitude and approach of the investigators engaged in these analyses.

The methods of analysis usually employed are aimed at: (a) identifying candidate industries for further detailed consideration; (b) estimating demand for products; (c) comparing different locations; (d) comparing different technologies or different processes of manufacture; (e) assessing profitability; and (f) assessing feasibility.

(a) Identifying Candidate Industries

Among the principal factors accounting for the growth of industry in the developing countries are import substitution, the increase in demand arising from income growth and the substitution of factory output for the production of handicrafts and household industries.[1/] These factors are to be taken into consideration in the preparation of the surveys.

1/ The share of these factors in the growth of industry has been estimated by H.B. Chenery at, respectively, one half, one third and one sixth. See Methods of Industrial Development, edited by A. Winsemius and J.A. Pincus, Organization for Economic Cooperation and Development, Paris, 1962, page 59.

In seeking leads for candidate industries the very first approach should be to screen historical data on imports into the country or the area under study. Substantial and growing imports of certain manufactured goods would indicate favourable prospects for domestic manufacture. Secondly, a study of agricultural, forestry, geological, and marine resources would indicate the possibility of setting up processing industries and resource-based industries. Thirdly, a screening of demand arising or likely to arise in other sectors of the economy from programmes of development of agriculture, education, housing, etc., would give leads for several intermediate goods, such as building hardware, bricks, agricultural tools, fertilizers, pesticides, etc. Fourthly, an analysis of the household and handicraft industry sector would reveal possibilities for the introduction of modern methods of manufacture in certain industries, such as leather footwear, sheet metal products, food processing, fruit canning, etc. Fifthly, if the country or area already has one or a few large industrial enterprises, the demand for stores, intermediate products and components of these factories will point towards possible candidate industries of small and medium size.

A competent and experienced industrial economist or industrial engineer would be able to provide a negative check on the list of candidate industries by excluding those products which are not likely to have a sufficient market or which are not likely to command sufficient complementary resources - skilled labour, raw materials, capital, etc. - or which are clearly not feasible technically on a small or medium scale. He would then work out a realistic list for more detailed consideration.

(b) Demand estimation

After drawing up a list of candidate industries, the very first check for feasibility will be to make a demand projection for each product in order to determine the size of the potential market and the number and size of manufacturing units required.

Before a demand projection is made, it is necessary to have a clear idea of the factors on which demand for the products of a particular industry depends. Data should be collected not only on production trends and sales trends for the articles in question, but also on related factors which influence demand. For example, the demand for motor vehicle batteries would be estimated not only on the basis of a projection of trends in consumption, but also of prospective developments in highway construction and road transportation, the anticipated growth in income and in the number of persons owning automobiles, etc. Similarly, the demand for building hardware should be related to housing and construction activities.

A careful estimate of current consumption of the product in question must obviously precede estimation of future demand. When a product is not manufactured in the area, annual imports corrected for any changes in inventory would provide an idea of the apparent consumption of the product. When there is already some manufacturing in the area, apparent consumption is arrived at by figures of production within the area plus imports into the area, less exports from the area, corrected for inventory changes. Often figures of imports into a region or area, which forms part of a country, or of exports from it or of production of small-scale enterprises, are not readily available. In such a case, consumption may be estimated either through a survey of and inquiries with the principal dealers and institutional consumers in the principal markets of the area or through allocating to the area a share of the national consumption of the product on the basis of population, personal income and gross retail sales; or by deriving consumption of the product under consideration from that of a related product which might be known, for instance, bicycle seats from number of bicycles on the road or school scientific equipment from school enrollment in science classes.

The rate of growth of consumption in the recent past, say, the last four or five years, should also be estimated. It is often difficult to obtain the necessary data and indirect methods need to be employed. For instance, the growth in consumption may be

calculated from figures of sales of representative dealers over a period of three to four years. Some related data may need to be used; for example, the trend of consumption of brass lamp holders could be gauged from the trend in domestic electric connexions in the area.

Future demand for a specific item should be projected on the basis of trends in consumption of the article and changes in related factors, prospective increase in incomes and its likely effect on consumption of the article, changes in tastes and fashions, growth of substitutes, export possibilities and any other factors likely to affect future demand. In projecting past trends into the future, allowance should sometimes be made for unusual influences at work in the recent past or the possibility of rapid development in the near future. For instance, on account of severe foreign exchange restrictions, there might be considerable unsatisfied demand for an article, which might result in a very rapid increase in consumption immediately after domestic manufacture is established, but the demand may level off after a few years to normal replacement levels. Also, entrepreneurial innovation and market promotion might give rise to demand for entirely new articles never consumed before, especially in a community experiencing growth in incomes on account of agricultural and infra-structure development; for example, rubber tires replacing wooden or iron tires in animal-drawn vehicles, electric fans replacing manually operated devices for ventilation and cooling.

Projections of demand may also be made by comparing conditions of growth in other countries at similar stages of development. In a limited way, this method can be used in comparing development in different areas within the country. Projections of demand for particular articles in one region could be applied to other regions if conditions of growth are similar.

One of the methods employed in countries where detailed consumer expenditure data are available is the projection of consumer expenditures for various manufactured products in line with an assumed new income pattern. If consumer expenditure data for particular products are available for different income groups, the demand for the article in question could be projected by assuming that consumers who move into the new income group spend their income more or less in the same way as consumers already in that income group. Family budget studies and data on consumer expenditure patterns of different income groups could be used for this purpose.

Data are available in some countries for calculating income-elasticity coefficients of demand for various products. These coefficients express the relation between changes in per capita income and changes in per capita consumption of the product in question. These coefficients can be employed as one of the tools for the estimation of future demand.

In countries having detailed statistical data and employing advanced statistical tools, it would be useful to use input-output tables for forecasting demand. An input-output table makes possible a detailed analysis of inter-industry relations. If such a table can be set up, it will indicate for a particular industry how much of its output goes to each of the other industries and to households. It will also show how much this particular industry buys from other industries and how much it pays out to households in wages and salaries. The table enables calculations to be made of the effects on every industry of a given change in any particular type of demand. For instance, the demands generated by a house building programme for lumber, bricks, cement, paints, and so on could be calculated. The use of input-output analysis often meets with difficulties in developing countries due to the inadequacy of statistical and techno-economic data for constructing tables.

(c) Location analysis

The selection of appropriate locations for recommended industries is an essential aspect of pre-investment studies. Indeed, industrial feasibility cannot be considered without reference to economics of location. In general, the best location for an individual manufacturing unit is the one involving the smallest total transfer costs, that is, the procurement costs of materials and energy and the distribution costs of product to the local or other markets. Market-oriented industries are those in which unit transfer costs (say, per ton mile) are higher on products than on materials. Materials-oriented or energy-oriented industries, are those in which procurement costs of materials or energy are higher than the distribution costs of products.

Studies of the structure of British and American industries[2/] indicate a definite correlation between low degree of localization of industry and small size of plant. Industries having predominantly smaller size plants are widely dispersed on account of dispersion of their supplies and markets and the heavy cost of transport of their materials and products. "Some industries have dispersed small plants to reduce transport costs of inflowing materials or of outflowing products; other industries have extremely localized small plants to reduce transport and contact costs between them; other (or the same) industries have small plants specialized and concentrated upon small-scale production".[3/]

According to another recent study,[4/] the predominance of small plants in an industry is to a very great extent determined by locational factors, and only to a lesser degree by process influences and market influences. About 57 per cent of the value added by

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2/ Investment, Location and Size of Plant by P. Sargant Florence, Cambridge, 1948; Post-war Investment, Location and Size of Plant by P.S. Florence, Cambridge, 1962.

3/ Investment, Location and Size of Plant by P.S. Florence, pp. 82-83

4/ Modern Small Industry in Developing Countries by E. Staley and R. Morse, McGraw Hill, New York, 1965.

manufacture in small plants in the United States in 1958 was accounted for by types of industries influenced by factors which make for dispersed location and hence for smaller plant size than if the industry were geographically concentrated. These are: factories which process a dispersed raw material (12 per cent), products with local markets and relatively high transfer costs (31 per cent) and service industries (14 per cent). Process influences, in which scale economies are not pronounced, accounted for 20 per cent of small factory output (separable manufacturing operations 14 per cent, craft or handwork 2 per cent, assembling or mixing or finishing operations 4 per cent). Finally, direct market influences accounted for 23 per cent of small plant output - 14 per cent by differentiated products having low scale economies and 9 per cent by industries serving small total markets.

In considering location factors for small-scale industries, it should be noted that although there is a linear relationship between the degree of localization and size of plant, this is true only up to a point. Florence has noted that at highest levels of localization there is a marked concentration of industries with medium-size plants. External economies accruing from a high degree of localization obviate to some extent the need for the internal economies of the large plant. "A localization of many medium or smaller plants offers... economies of juxtaposition between suppliers and demanders, between specialized processes and between auxiliary services, and the main process, to those found within a single large plant. The very fact of such juxtaposition brings with it increased density of demand and hence...tends to enlarge the small plants into medium-sized plants".5/

In an area survey or a feasibility study, techniques of comparative cost analysis and industrial complex analysis might be employed to determine the best location or alternative locations for specified small-scale industries or for a group of small-scale industries.

5/ Investment, Location and Size of Plant by P.S. Florence, Ibid., pages 87-88.

Comparative cost analysis will involve working out for each industry and each location, data on procurement cost for materials, distribution cost for products, labour costs, energy costs, rent and depreciation per unit of production; the advantages and disadvantages of the locations could thus be compared and preference ratings set out.

Industrial complex analysis involves a comparison for different locations of the net advantage of combined location of a group of inter-related industries. Such an analysis makes it possible to take into account the economies of agglomeration and to evaluate the over-all advantages of location of several inter-related industries of small and medium size. The location selected through industrial complex analysis might not necessarily be the most advantageous per se for each industry, but the disadvantages of location for some industries, for instance, higher procurement cost or higher distribution cost would be more than made up by advantages for other industries and by over-all economies of concentrated location, such as lower cost of power, lower cost of repair facilities, lower manufacturing cost on account of utilizing one anothers product and services - stores, components, packing materials or certain processes. The significance of industrial complex analysis lies in the possibility of a combination of some industries (advantageous by themselves for that location) with other industries (not advantageous by themselves) which yields a net advantage greater than through location of only those industries which are per se advantageous for that location.

Pre-investment studies for small-scale industries have to be carried out against the background of government policies and measures for influencing industrial location; in turn the studies would help in the formulation of specific measures of promotion. In developed and in many developing countries, the principal objectives of industrial location policy generally are to promote balanced regional development, to promote employment and to induce development in relatively backward areas of the country, while at the same time

checking congestion in the main urban centres. The measures which most governments take to influence industrial location include provision of infra-structure facilities, fiscal incentives (tax exemptions or abatements), financial incentives (subsidies and low interest loans), extension services (economic, technical, managerial and marketing assistance), training facilities and so on.

In the developing countries, the establishment of industrial areas and industrial estates is becoming a major instrument of industrial location policies aimed at stimulating entrepreneurship and promoting small-scale industries. Properly planned and located industrial estates may have a catalytic effect in attracting industries to under-developed areas having industrial potential, and provide a focal point for extending integrated assistance to small entrepreneurs. Industrial areas are effective, in conjunction with other incentives, and provided basic location requirements are met, in attracting larger industries. A programme for promotion of industrialization through the establishment of industrial estates and industrial areas requires adequate pre-project planning. The first step is to survey appropriate locations. Such a survey, which might be called an industrial estate feasibility study, should assess the industrial potential of the proposed location (or of several alternative locations) and of its hinterland, the resources and demands of the area, the types of industries feasible, the extent of capital and entrepreneurship likely to be generated and, in the light of this review, estimate the size of the industrial estate, the infra-structure facilities required, the common service facilities and other promotional measures required, including technical, financial and management assistance. The planning of an industrial estate should be dovetailed with over-all industrial planning for the region and the feasibility study should include such considerations as effective demand for factory space in the location; proximity to markets, transport, skilled workers, housing and other worker amenities; construction costs in relation to existing rental levels in the location; availability of equipment

and raw material supplies to prospective occupants, and adequacy of power and other utilities. It should also be co-ordinated with regional planning, if any, and zoning, and the usual physical planning criteria should be applied in site selection and development, and construction of factories and other buildings and facilities.

An outline for an industrial estate feasibility study is presented in Appendix V.

(d) Choice of size, processes and technology

An area survey report should result not only in drawing up a list of feasible industries and desirable locations, but also in estimating the number and size of enterprises in each industry recommended for establishment. An industry feasibility study should consider alternative processes and technologies and select those best suited for the economy. A model scheme or an industry guide sheet should describe the processes of manufacture recommended and the requirements of capital, labour, machinery, materials and so on.

The demand projections should estimate the maximum capacity for each planned industry, allowances being made in each case for the additional slack capacity usually required for efficient operation. In recommending the size and number of factories to be established, the choice available between different processes and techniques of manufacture and between different machines and equipment (especially for processing, light engineering and service industries) should be carefully considered. The most advanced technology is not necessarily the most economical, especially in a developing country, having regard to the size and nature of the market, the size and quality of resources, the capital costs (interest, depreciation), the labour costs (wages and salaries), the need to economize capital and employ more labour and the need to economize in the use of foreign exchange resources. In selecting an appropriate technology (or mix of technologies for different processes or different components), the need to ensure

the required quality and standards in the end-product and the need to ensure long-term growth of the enterprise and of the industry should be given due consideration.

One method for selection of the most appropriate technology is to compare the costs of two or three alternative technologies, if any, the extreme cases of hand production and automation being prima facie ruled out. The elements to be compared and evaluated would be capital investment, employment, capital investment per worker, capital investment per unit product, labour cost per unit product, material cost per unit, overhead per unit, and total cost per unit product. In general and depending on the relative capital costs and the relative labour costs, different technologies would be appropriate for different levels of output required. The over-all allocation of capital and foreign exchange resources in the economy would also affect the choice of technology.

Guidance on the choice of size and technology could be derived from statistical and engineering studies of industry in the advanced countries. Information is generally available on average number of workers per establishment, ratio of fixed capital to value added by manufacture, wages as per cent of value of product, materials cost as per cent of value of product, horsepower per worker and other relevant data. Model schemes, feasibility studies and industry guide sheets, particularly those prepared for other developing countries may usually be either directly applied in, or adapted to, the conditions of the area or country being studied.

Industrial research institutes and technological information centres in developing countries need to give special attention to the identification of capital saving techniques. They should also build up information on specifications and capacities of different types of machinery and equipment.

(e) Profitability analysis

Profitability or percentage return on investment is the main criterion for investment by private entrepreneurs, and should be estimated in the area survey reports for the recommended industries. An estimate of the rate of return on investment is absolutely necessary in the feasibility reports and model schemes. Profitability is measured by the percentage rate of profits to investment in equity capital (or proprietary investment).

In order to work out profitability, data should be collected for estimating: (i) total manufacturing cost (direct labour cost, materials cost and overheads); (ii) net sales (estimated gross sales minus selling costs); (iii) profits ((ii) minus (i)); (iv) total capital needed (fixed capital plus working capital plus contingency reserve); (v) equity capital needed (total capital needed minus estimated borrowings from banks and other sources); and (vi) return on investment ((iii) divided by (v) multiplied by 100).

In the selection of feasible industries, profitability ratios are meaningful in the context of the prevailing rates of return in the money and capital markets of the country, which indicate alternative returns for funds available for investment. What particular minimum profitability rate will attract such funds to the industry will depend not only on the rates of interest in the money market and rates of return in the securities market, if any, but also on fiscal incentives offered by the Government, the long-term outlook for the industry, the nature of entrepreneurship in the country and, where the objective is to attract foreign investment, the return expected by foreign capital and entrepreneurship. Government or central bank policies and measures to influence the availability of funds for industry, and the possibility of providing a desirable interest rate, which might be different from the prevailing interest rate, could be taken into account by making calculations on the basis of shadow rates of interest or accounting prices for different factors of production.

(f) Other feasibility criteria

While profitability is a major criterion for attracting individual entrepreneurial initiative, several other criteria should be considered from the point of view of the economy of the country or area under study. Not all industries which are likely to be profitable individually would qualify as feasible, desirable or necessary.

In countries with scarce capital resources, the maximization of productivity of capital investment for the economy as a whole is a paramount objective. For a given industry or for an enterprise, productivity of capital investment is measured by the capital-output ratio, that is the ratio of capital invested (usually fixed capital) to the value added by manufacture (gross value of output minus value of materials, supplies and energy).

Another consideration is usually to maximize employment, and to reduce the value of capital investment per worker employed. Where skilled labour or technical labour is scarce, the objective may be to maximize labour productivity (value added by manufacture divided by number of labour used).

The net effect of the industry on the country's foreign exchange resources is also to be considered. Industries should be evaluated having regard to their effect on using or saving foreign exchange both in the short run and in the long run. In most developing countries, particularly those with balance of payments difficulties, industries using indigenous raw materials or replacing imports or promoting exports are usually given preference.

The use of input-output tables, along with regional income data, facilitates considerably the planning of the use and allocation of resources (including labour and capital) and the production of intermediate and final goods in a manner consistent with the economic and social goals set for the economy of the area or the country. Goals may be set for the region and for the country for goods for household

consumption, goods for investment in plant and equipment, goods for purchase by government and goods for export. Input-output tables make it possible to calculate the input requirements for each region and for the country and the output to be produced by each industry. Under such a system of planning, development projects, in particular industries may be allocated among regions with a view to reducing costs to comparable levels.

DYNAMISM, VARIETY AND GROWTH - SOME CHARACTERISTICS OF PROSPECTIVE SMALL INDUSTRIES

There is abundant evidence both in developed and developing countries that a variety of products are viable for manufacture by small-scale enterprises. In any particular country and at any particular moment, a number of inter-acting factors combine to give small enterprises a favourable position in the manufacture of certain products and in certain services. The effects of production costs, scale economies, market characteristics and location factors have to be studied and analysed. The types of products in which small plants predominate in the United States, it has already been pointed out, are characterized largely by locational influences, but to some extent also by market influences and process influences. A detailed review of data and experience in several developing countries, recently carried out,6/ identifies five principal types of small industry opportunities.

Firstly, there are opportunities in the dispersed processing of weight-losing or perishable raw materials depending on the resources, geography, transport network and land ownership patterns of the country or area. Examples of such industries are rice milling, rice bran oil, saw mills, wood drying kilns, vegetable oil extraction, cheese, butter, leather tanning, fruit and vegetable canning, hardboard and strawboard.

Secondly, there are a number of construction, agricultural and household goods which offer opportunities for small-scale industries

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6/ Staley and Morse, Ibid., Chapter 6.

because they are mainly bulky or weight-gaining and hence market-oriented. Examples are agricultural implements, sheet metal products, containers, mixed fertilizers, bricks, concrete products, structural metal products, plastic pipe and conduit, bread, soft drinks, ice cream, furniture and truck and bus bodies.

Thirdly, there are products of simple assembly, mixing or finishing operations, requiring low investment, having moderate economies of scale, being labour-intensive and having low transfer costs. Examples are: food products, clothing, footwear, leather goods, pharmaceuticals, paints and varnishes, sports goods, plastic products and toys. These are particularly suitable for establishment in urban centres enjoying external economies.

Fourthly, there are service industries which have potentialities for undertaking quality job work and specialized tasks. Examples are: tool and die making, electroplating, printing, electrical servicing, auto servicing, foundries and machine shops.

Fifthly, separable manufacturing operations in the metal-working industries offer potentially the greatest scope for small enterprises. The versatility and separability of machine tool operations, the endless number of products and components to be made, and the interchangeability of standard parts, offer great opportunities for craftsmen and engineers to adapt and innovate constantly in response to changing cost and production possibilities. The dynamic element in the metal-working industries is well suited for the technically-oriented entrepreneur and accounts for the significant role of the small proprietory and partnership firms in tool and die making, designing, and precision job work, even in developed countries. Specialization in certain operations makes possible scale economies; versatility and precision working yield high value added in the products manufactured. The possibilities of subcontracting between small and large industries are particularly great in the metal-working sector.

MODEL SCHEMES OR INDUSTRY GUIDE SHEETS

The preparation, publication and dissemination of model schemes for industries considered to be feasible on the basis of area surveys or industry studies is one of the most important ways in which entrepreneurs can be attracted and guided towards small-scale manufacturing activities. A model scheme should be realistic and practical. While it should reflect informed judgement on technical and economic factors, including production requirements, size of plant, locational factors, raw materials problems, competitive costs and distribution factors, it will necessarily be a type model and will have to be adapted to the local situation and corrected for any changes is cost and prices. The entrepreneur should be guided in translating the scheme into a realistic project by the extension agency or the development agency, but the responsibility and risk of decision-making should evidently rest with the entrepreneur.

The United States Agency for International Development and its predecessor the International Cooperation Administration, have published a number of Industry Fact Sheets, based on United States small industry data but containing all the essential information outlined in Appendix IV, for the guidance of the Agency's industry officials as well as of national industry development agencies in developing countries. The Agency has also published Plant Requirement Reports for a number of industries, which give more detailed data on production specifications, machinery and equipment, manufacturing operations, input requirements, costs and profitability. The literature published by the Agency is extremely valuable as reference material, but has to be adapted to the needs and requirements of each developing country, since investment and cost data reflect conditions in the United States.

The Central Small Industries Organization of the Government of India has prepared Model Schemes for 270 products and Industry Prospect Sheets for 58 products. The latter are prospect reports containing analysis of the supply-demand situation and economic data on feasibility and scope for the respective industries. The model schemes include most of the information outlined in Appendix IV for

the respective industries. They are based on typical Indian conditions and Indian experience, but for any specific location within the country or abroad they have to be modified to suit local needs and conditions.

ORGANIZATION OF PRE-INVESTMENT STUDIES

While an over-all survey for fact finding and policy and programme formulation will be required before the inception of a development programme for small-scale industries or in its initial stages, organization of pre-investment studies on a continuing basis is vital for the success of any promotion programme. In most developing countries such studies should be organized under government auspices as part of the activities of the government or semi-government agency charged with the operation of programmes of industrial development - department of the Ministry of Industry, small industry service institute or industrial development corporation. In countries having well organized chambers of commerce, trade or industry associations, university departments of applied economics, industry consultant firms or private economic research institutes, some types of studies could be undertaken by these institutions under grants provided by the government. However, the need for continuous appraisal of prospects for different industries and updating of surveys can be met only by a group regularly engaged in this work.

Different types of arrangements for carrying out pre-investment studies are illustrated by the following examples relating to India, Southern Italy, Puerto Rico and Turkey. In India, an economic investigation group was set up in the headquarters organization of the Development Commissioner for Small-scale Industries in 1955, that is, from the very inception of the small industry development programme. Economic investigation staff serve in the sixteen Small Industries Service Institutes established in the states. A programme

of industry outlook reports, area development surveys, industry prospect sheets, market surveys, model schemes and economic information service is carried out under central direction and co-ordination. Over the years the emphasis has shifted, on the one hand, from studies oriented to assist the government agency to those designed to benefit the industry and the entrepreneurs and, on the other hand, from macro-economic studies concentrating on the industry or the area to micro-economic studies concentrating on the enterprise and the entrepreneur. Close collaboration of engineers, technologists and management specialists with economists in assessing cost factors, economies of scale, substitution of labour for capital, choice of technology, etc. has been found to be essential; in the beginning this was achieved by including engineers in the economic research groups and later by encouraging close consultation amongst different specialist groups in a Small Industries Service Institute in carrying out the surveys and studies.1/

In Italy, pre-investment studies for industry in general are carried out by a number of public institutions set up for promoting the economic development of the southern part of the country. Studies and analysis are also undertaken by an independent private non-profit organization for the benefit of both public institutions and private entrepreneurial groups. This organization is the Istituto per l'Assistenza allo Sviluppo del Mezzogiorno (IASM), which has as its members public and private agencies, including the Cassa per il Mezzogiorno and the three Regional Credit Institutes, viz ISVEIMER (Istituto per lo Sviluppo Economico dell'Italia Meridionale), IRFIS (Istituto Regionale per il Finanziamento alle Industrie in Sicilia) and CIS (Credito Industriale Sardo). IASM is financed by the annual dues of its members, grants from the State and private or public agencies, donations and fees for certain services to

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1/ See Economic Research for Small Industry Development: Illustrated by India's Experience by Nanjundan, S., Robison, H.E., and Staley, E. Stanford Research Institute, Asia Publishing House, Bombay, 1962.

cover part of their cost. IASM carries out four major types of activities: the promotion of investment in southern Italy; the provision of services of all kinds (commercial, financial, technical, marketing); studies, particularly market studies and sectoral analysis; the provision of assistance to the consortia establishing industrial areas and industrial estates.

In Puerto Rico, the Industrial Development Company (PRIDCO) - a government-owned agency - carries out programmes, the government Development Bank finances enterprises, and the Economic Development Administration (EDA) - a government department - carries out research and promotional work. EDA has an Office of Economic Research, which conducts basic research on the feasibility of new industrial operations, analyses performance and develops targets for various programmes. It also provides a much used question and answer service for government agencies as well as businessmen. On the basis of the studies carried out by the Office of Economic Research, the Industrial Promotion Department of EDA provides information on the feasibility of industrial projects and assists in planning an enterprise, including working out locational and financing problems, training of workers, industrial research and marketing research.8/

In Turkey, feasibility studies for location of industrial estates and studies on prospects for various industries have been undertaken by the Union of Chambers of Commerce, Industry and Commodity Exchanges, supported by membership funds, government grants and foreign aid funds. These studies have been designed mainly to attract foreign private investment.

In some Scandinavian and west European countries, surveys and studies, provision of market information and other services, are undertaken as a joint activity by small manufacturers themselves,

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8/ See papers on Puerto Rico in the publications entitled "Methods of Industrial Development", 1962, and "Regional Economic Planning: Techniques of Analysis", 1961, published by the European Productivity Agency of the Organization for Economic Cooperation and Development, Paris.

either through industrial and trade associations, or through circles or exchange-of-information groups organized by them. The activities of these associations and groups are supported by government grants. In the developed countries, research services are mostly provided on a commercial basis by private consultant firms.

TRAINING OF PERSONNEL

Most newly industrializing countries lack suitable private institutions, trade associations or chambers of commerce for undertaking pre-investment studies and surveys, which will, therefore, have to be organized initially under government auspices. A research group of economists, engineers and management specialists should be set up in an industrial development agency, an industrial extension service, a department or a corporation, to be established by the government, which would prepare industry feasibility studies, area surveys, market studies and model schemes, and develop economic and technical information for the use of the agency and of prospective entrepreneurs. It will often be difficult to find personnel for such a research group trained and experienced in methods of applied industrial economic research. Technical assistance might be obtained for the training of personnel through the services of foreign experts and the provision of fellowships overseas for national personnel. The United Nations has set up with assistance from the Special Fund Industrial Studies and Development Institutes in some developing countries, for undertaking feasibility studies and training national counterpart personnel. In India, where a comprehensive and countrywide programme of small industry development has been undertaken, it has been found necessary to establish a national training institution for the training of industrial development and industrial extension personnel. One of the training courses undertaken by the Small Industry Extension Training Institute in Hyderabad is in the field of area development; District Industries Officers, Assistant Directors of Industries, Economic Investigation

Officers and others responsible for industrial development in districts are trained in development economics, analysis of industrial potential in an area and skills of promotional work.2/

2/ See section on Industrial Extension Service, below.

APPENDIX I

OUTLINE FOR AN INDUSTRY FEASIBILITY STUDY

I. INTRODUCTION

(a) Purpose, scope and method of study

Objectives of the study, definition of the industry and products included, coverage of the study by area and type of enterprise, techniques of analysis employed.

(b) Current status of the industry

A very brief account of the growth of the industry and its existing status in the country or area under study, including a statistical summary of number and size of enterprises, employment, production, capacity, investment, etc.
(This section is obviously not required if no manufacturing units exist and the products are not even manufactured by traditional methods in handicraft, household and cottage industries).

II. MARKET ANALYSIS

(a) Demand outlook

An estimate of consumption trends of the products of the industry, an analysis of factors governing demand and a projection of future demand. Consumers should include: (i) individuals, (ii) commerce and industry, (iii) government or public agencies, and (iv) exports. Projection of future demand should be done at least over a five-year period.

(b) Competitive outlook

Factors affecting competition: shortage or abundance of current supply in relation to demand, extent of relative

newness of the product, influence of import restrictions, dominance of the market by particular brands, consumer preference or prejudices, imported vs. indigenous products; products of large-scale industry vs. products of small-scale industry; effect of substitutes, relative influence of quality and price, market and type of products in which new enterprises will have greatest competitive advantage.

(c) Distribution and Marketing Factors

Main types of market for the product (e.g. household or institutional) and characteristics of these markets; trade channels; pricing policies and practices; distribution costs, mark-ups, commissions, discounts, etc.; transportation costs; inventory turnover and stock requirements; working capital requirements for marketing functions.

III. RESOURCE ANALYSIS

Sources, availability and cost of factors of production for the industry

(a) Raw materials and components
(b) Power and fuel
(c) Labour - skilled, unskilled, technical
(d) Factory accommodation
(e) Machinery and equipment
(f) Capital and credit

IV. LOCATION, SIZE AND TECHNOLOGY

(a) Location: Location factors, choice of location and recommended location.
(b) Size: Number and size of enterprises recommended and reasons therefor.
(c) Technology: Factors influencing choice of technology and the technology recommended.

V. PRODUCTION ASPECTS

1. Engineering

(a) Products: type, size, specification and design of product or products recommended for manufacture.

(b) Manufacturing process: a brief analysis of proposed process of manufacture.

(c) Plant and equipment requirements: type or types of machinery and equipment recommended, sources of supplies and cost.

(d) Requirements and costs of power, fuel, water, gas, etc.

(e) Requirements and costs of materials and components.

2. Financial

(a) Estimate of investment required in fixed and working capital.

(b) Estimate of cost of production and profitability.

VI. PROMOTIONAL MEASURES REQUIRED

(a) Incentives for entrepreneurship

Special incentives required from Government for encouraging entry into the industry such as import duties and restriction on products, import quotas for material and machinery, tax concessions, availability of loans, etc.

(b) Training facilities

Facilities available and required for training of skilled labour, technicians, etc.

(c) Market promotion

Government purchase schemes, advertisement and promotion in domestic and foreign markets by trade or industry association, etc.

(d) Other measures

Measures to develop raw materials, a phased programme of development of the industry, etc.

APPENDIX II

OUTLINE FOR AN AREA SURVEY

I. INTRODUCTION

(a) Objectives and scope of survey, methodology of survey and analysis.

(b) Brief description of area, including physical and geographical features.

II. STRUCTURE OF EXISTING INDUSTRIES

A brief analysis of information on existing industries in the area. The data for each industry should include number of units, capacity, production, capital investment, employment, technology (traditional or modern), size (small, medium or large); the role of manufacturing industry in the economy of the area, its present contribution to employment, national income and growth, should be analysed.

III. RESOURCE ANALYSIS

(a) Human resources

(i) Occupational distribution and employment characteristics of the population.

(ii) Unemployment, under-employment, migration to urban areas.

(iii) Quantity and quality of labour - unskilled, skilled, technical and supervisory.

(iv) Education and literacy, technical skills.

(b) Material resources, developed and underdeveloped

(i) Agricultural, forestry and fishery products - foodstuffs, fibres, fuels, industrial raw materials.

(ii) Animals and animal products.

(iii) Minerals metals, fuels, construction materials, other industrial raw materials.

(iv) Other resources.

The analysis of human and material resources should be related to the major objective of the survey, that is, industrial development. A brief analysis of the present pattern of utilization of resources will be useful. Resources not significant for industrial utilization need not be dilated upon.

IV. INDUSTRIAL CLIMATE, ECONOMIC FACILITIES AND SOCIAL SERVICES

(a) General industrial climate, including government policies and programmes.

(b) Transportation facilities and services - railways; highways; road, water and air transport.

(c) Communications - telephone, telegraph, radio, post.

(d) Power, water, sanitary services and other utilities.

(e) Industrial accommodation - land and buildings; industrial areas and industrial estates.

(f) Educational, medical and other community services.

(g) Capital and credit sources and availability - private, institutional, governmental.

(h) Entrepreneurship - sources and availability.

(i) Trade associations, co-operatives, other industrial and commercial organizations.

(j) Training facilities for different trades, supervisors, managerial personnel.

This chapter should analyse the general facilities available and required, without which industrial enterprises cannot prosper even if there are resources to be tapped and demands to be catered to. The analysis should be directly relevant to the industrial opportunities for the area.

V. DEMAND AND MARKET ANALYSIS

(a) Living standards and consuming ability, demand analysis.

(b) Markets and consumption patterns.

(i) within area - local production and imports, competition and source.

(ii) outside area - local production exported, consumption in "export" markets.

(iii) Distribution channels and costs.

This chapter should give a brief picture of the demand trends in the area and indicate the candidate industries by studying the products which are now consumed or likely to be consumed in the area in quantities sufficient to justify the establishment of new manufacturing enterprises. The following information might be analysed: population characteristics relevant to markets for products, income trends of the population and purchasing power of different income groups, exports from and imports into the area, sales trends of a sample of dealers in producer and consumer goods, demand for component parts by large factories, pattern of distribution of manufactures and analysis of difference between ex-factory price and final retail price of products.

VI. NEW INDUSTRIAL OPPORTUNITIES

A detailed survey of prospects and requirements, industry by industry, for each industry recommended on the basis of the preceding analysis (especially emerging from sections III and V), including existing industries recommended for expansion;

(a) Estimated demand

(b) Competitive outlook

(c) Markets

(d) Favourable locations

(e) Number of units, size and technology

(f) Requirements for and sources of land and buildings, capital, machinery and raw materials

(g) Profitability analysis

Selection of industries might be based on existing demand, existing accessible resources, new demands for consumer and producer goods and components, and additional resources anticipated from technically feasible resource development. Phasing of establishment of certain new industrial enterprises to coordinate with establishment of facilities or development of resources should be considered. For the suggested new industries, detailed information on size of unit, requirements of capital, machinery, materials, labour, skills, etc., and anticipated profitability are important for entrepreneurs as well as for development agencies. If the industry analysis is not considered to be sufficiently comprehensive to justify unqualified conclusions and recommendations, the report should indicate additional studies necessary before firm decisions are warranted.

APPENDIX III

OUTLINE FOR A MARKET SURVEY

1. Objectives

   Description, types, brands, sizes, specifications, manufacturers selling prices of products surveyed. Objectives of the survey, for instance, to assess competitive position of products, to evaluate dealer and consumer reaction, to expand sales, to reduce distribution costs, etc.

2. Distribution centres

   Principal distribution centres and estimated volume and value of sales in each centre.

3. Trend in sales and demand

   An analysis of trends in sales and demand, based on sample survey of dealers and consumers/households. Trends according to income groups, distribution centres, rural and urban sectors, type of products, etc.

4. Competition

   Characteristics of competitive products, differences in wholesale and retail prices of different brands, differences in quality, weight, packaging, consumer preferences, etc.

5. Distribution outlets

   Estimated number of wholesalers and retailers in each centre. Average mark-up of wholesaler and retailer as percentage of cost price.

6. Prevalent market practices

   Distribution channels used, retailer and wholesaler practices, manufacturer and dealer pricing policies and practices. Commissions and discounts at different stages, advertisement and publicity.

7. Dealers' and Consumers' Reaction to products surveyed

   (a) Technical characteristics
   (b) Style
   (c) Price
   (d) Quality
   (e) Other features

8. Conclusions

   (a) Possibilities of extending distribution
   (b) Suggested distribution centres and outlets
   (c) Suggested improvements in quality of products, standardization, design, size, packaging, publicity and advertising, pricing policies and practices.

APPENDIX IV

OUTLINE FOR A MODEL SCHEME OR AN INDUSTRY GUIDE SHEET

A. Product description

B. General evaluation of prospects

(In relation to capital, labour, materials, machinery and management requirements. Not an analysis, but a qualitative statement. Suggested locations).

C. Market aspects

Users of the product
Sales channels and methods
Geographical extent of market
Competition
Market needed for plant described

D. Production requirements

1. Annual capacity - one-shift operation
2. Capital requirements
   (a) Fixed capital - land, building, machinery, equipment, fixtures, total.
   - Description and specifications of machinery and equipment (with cross reference to Section E layout).
   - Comments on sources and availability of machinery and equipment.
   (b) Working capital - direct materials, direct labour, manufacturing overhead, administrative costs, contingencies, sales cost, total.
   (c) Total capital
3. Materials and supplies - annual requirements, annual cost
   - comments on specifications and availability.

4. Power, fuel and water - annual requirements and annual cost.

5. Manpower

   (a) Number and types of managerial and supervisory staff, skilled and unskilled labour required.

   (b) Annual costs of direct and indirect labour

   (c) Comments on training needs and costs.

6. Total annual costs and sales revenue

   (a) Annual costs -- Direct materials, direct labour, overhead (supplies, power, water, indirect labour), administrative costs (interest, insurance, legal and audit charges), contingencies, sales costs (commissions, freight, travel) discounts, bad debts, depreciation on fixed capital.

   (b) Annual sales revenue - estimated ex-factory price per unit multiplied by number of units manufactured per year.

E. Plant lay-out, workflow and process of manufacture

(Layout to be shown according to scale)

APPENDIX V

OUTLINE FOR AN INDUSTRIAL ESTATE FEASIBILITY STUDY

I. INTRODUCTION

(a) Objectives

The objective or objectives to be achieved by one or several industrial estates should be clearly enunciated.

(b) Scope

The area or region being considered - relationship with overall physical, economic and industrial planning.

II. BACKGROUND INFORMATION

(a) Brief description of area, including physical and geographical features.

(b) Brief analysis of information on industrial development: chief industry concentrations, types of industries, number of enterprises, value of products, employment, etc.

(c) Major factors limiting industrial development (link up with I(a) how industrial estates are expected to assist in industrial development).

III. ECONOMIC CRITERIA

(a) Prospective industries, type of products, number of enterprises, size of enterprises and demand for factory accommodation. Selection of industries, for estimating the demand for factory accommodation, will have to be based on existing demand, existing accessible resources, new demands for consumer and producer goods and components and additional resources anticipated from technically feasible resource development. A survey of markets and resources will be necessary.

(b) Supply of labour

Extent of unemployment and underemployment, characteristics of employable population, availability of skilled labour and technically trained personnel, training requirements.

(c) Markets and communications

Accessibility of different locations to markets for the products to be manufactured. Influence of transport costs in cost of the products. Marketing facilities available.

(d) Supplies and services

Availability and cost of raw materials, supplies and services.

(e) Capital and entrepreneurship

Advantages of the suggested location or locations for prospective entrepreneurs. Banking and other financial institutions.

(f) Utilities

Existing and prospective development of power, water, sewage, gas and other services. Cost of utility installations and service charges for their use.

(g) Social services

Housing, education, recreation facilities.

IV. PHYSICAL CRITERIA

(a) Climate

(b) Land availability and costs.

(c) Site suitability

(d) Availability of building materials and labour.

(e) Economical installation of utilities

(f) Integration with regional planning and industrial and residential zoning

V. CONCLUSIONS AND RECOMMENDATIONS

(a) Number, size and location of industrial estates

(b) Number of factories, size of factories and products to be manufactured.

(c) Suggested lay-out of the estate or estates

(d) General facilities and services to be provided

(e) Technical service facilities to be provided

(f) Admission and lease policies

(g) Administrative arrangements

(h) Estimated capital cost of estate or estates and suggested phasing of development

(i) Estimated operational cost

(j) Over-all estimate of income and expenditure; and of expected return on investment (short-term and long-term)

(k) Sources of financing

(l) An over-all assessment of benefits to be expected from the industrial estate programme, e.g. employment, industrialization, contribution to local tax revenues, etc.